Kenya Country Report

PASCAR and WHF Cardiovascular Diseases Scorecard project

Lilian Mbau, Jean M Fourie, Wihan Scholtz, Oana Scarlatescu, George Nel, Gladwell Gathecha

Abstract

Data collected for the World Heart Federation's Scorecard project regarding the current state of cardiovascular disease prevention, control and management, along with related non-communicable diseases in Kenya are presented. Furthermore, the strengths, threats, weaknesses and priorities identified from these data are highlighted in concurrence with related sections in the accompanying infographic. Information was collected using open-source data sets from the World Bank, the World Health Organization, the Institute for Health Metrics and Evaluation, the International Diabetes Federation and relevant government publications.

On behalf of the World Heart Federation (WHF), the Pan-African Society of Cardiology (PASCAR) co-ordinated data collection and reporting for the country-level Cardiovascular Diseases Scorecard to be used in Africa.[1-4] In 2018, Kenya participated in the pilot study to develop the scorecard that was used to inform some of the discussions at the roundtable held together with the Kenya Cardiac Society (KCS) (OS, pers commun). Therefore, it was decided to include Kenya's data within the present project, which were updated with assistance from the KCS and Ministry of Health (MoH). In this report, we summarise Kenya's strengths, threats, weaknesses and priorities identified from the collected data, along with needs to be considered in conjunction

Kenya Cardiac Society, Nairobi, Kenya
Lilian Mbau, MB ChB, MPH, PgDip (Diab)

Pan-African Society of Cardiology, Cape Town, South Africa
Jean M Fourie, MPhil
Wihan Scholtz, MSc, wihan@medsoc.co.za
George Nel, MSc

World Heart Federation, Geneva, Switzerland
Oana Scarlatescu, MA

Department of Non-Communicable Diseases, Ministry of Health, Nairobi, Kenya
Gladwell Gathecha, BDS, MSc

with the associated sections in the accompanying infographic. Data sets that were used included open-source data from the World Bank, the World Health Organization (WHO), Institute for Health Metrics and Evaluation, the International Diabetes Federation (IDF) and government publications.

Part A: Demographics

Kenya is a lower-middle income country, as indicated by the World Bank (2018), with 72.5% of its people living in rural areas.[5] In 2015, about 37% of the population was living below the US$1.9-a-day ratio. Life expectancy at birth in 2019 was 64 and 69 years for men and women, respectively.[5] The general government health expenditure was 2.1% of the gross domestic product (GDP), while the country's GDP per capita was US$1 816.5 in 2019.[5,6]

Part B: National cardiovascular disease epidemic

The national burden of cardiovascular diseases and non-communicable disease risk factors

Kenya had a premature (30–70 years old) cardiovascular disease (CVD) mortality rate of 8%, while the total CVD mortality rate was 13.8% in 2019.[7] The percentage of disability-adjusted life years (DALYs) resulting from CVD was 6.3%. The prevalence of atrial fibrillation (AF) and atrial flutter was 0.1%, while that of rheumatic heart disease (RHD) was 1.2%.[7] The total RHD mortality rate was 0.14% of all deaths (Table 1).[7]

Tobacco and alcohol

The prevalence of tobacco use in adult men 15 years and older was 18.8% in 2018, while adult women (2.3%) hardly smoked.[6] However, STEPS (Step-wise survey for NCD risk factors) data reported in 2015 indicated 23% of Kenyan men and 4.1% of women aged 18–69 years used tobacco.[8] Data available for the young smokers, 13–15 years old, revealed 12.8 and 6.7% of boys and girls, respectively, smoked tobacco in 2013.[9] The estimated annual direct cost of tobacco use was not available. The premature CVD mortality rate attributable to tobacco is 2% of the total deaths, which is much lower than the global 10%.[10] The three-year (2016–18) average recorded alcohol consumption per capita (≥ 15 years) was 1.7 litres, which is lower than most neighbouring countries, except Ethiopia with 0.9 litres (Table 1).[6]

Raised blood pressure and cholesterol

In 2015 the percentage of men and women with raised blood pressure (BP) [systolic BP (SBP) ≥ 140 mmHg or diastolic BP (DBP) ≥ 90 mmHg] was 25.1 and 22.6%, respectively.[8] Country data for raised total cholesterol level (≥ 5.0 mmol/l) in 2015 was 7.3% for men and 12.8% for women.[8] The percentage of DALYs lost because of hypertension was 4.0%,[11] whereas mortality rate caused by hypertensive heart disease was 1.7% in 2019,[7] which was lower than the global figure of 2.05% (Table 1).

Physical activity

In a study among adolescents, 86.8% were found to be insufficiently active [< 60 minutes of moderate to vigorous-intensity physical activity (PA) daily].[12] In 2015, the age-standardised estimate for adults who were insufficiently active (< 150 minutes of moderate-intensity PA per week, or < 75 minutes of vigorous-intensity PA per week) was 6.5%, which was much lower than that of the global data at 27.5% (Table 1).[8]

Overweight and obesity

In 2015, adults aged 18 to 69 years had a prevalence of overweight [body mass index (BMI) ≥ 25–< 30 kg/m^2] and obesity (BMI ≥ 30 kg/m^2) that was 19 and 8.9%, respectively.[8] More women were respectively overweight or obese (24.9, 13.7%) than men (13.2, 4.3%) (Table 1).[8]

Diabetes

The percentage of the population aged between 18 and 69 years old, defined with a fasting glucose of ≥ 7.0 mmol/l or on medication for raised blood glucose (age-standardised) in 2015, was 1.5% for men and 2.3% for women.[8] In 2019, the prevalence of age-adjusted (adults 20–79 years) diabetes was 3.1%,[13] which is lower than the global prevalence of 9.3% (Table 1).[13]

Part C: Clinical practice and guidelines
Health system capacity and guidelines for NCD risk factors

Kenya had an average of 1.6 physicians and 10 nurses per 10 000 of the population in 2018/19. The number of hospital beds was 13.3 and reported as 'The national average in-patient bed density' by the health facility assessment in 2018/19.[14]

In 2018, a locally relevant clinical tool was developed to assess CVD risk, which included locally relevant clinical guidelines for CVD prevention and detecting and managing AF.[15] Guidelines for managing pharyngitis were reported in 2009.[16] Locally relevant clinical guidelines for the management of acute rheumatic fever (ARF) and RHD have also been implemented, as have those for the treatment of tobacco dependence and its detection.[15] However, no clinical registers of people with a history of ARF and RHD were available. In 2010, national clinical guidelines for managing diabetes were developed based on local and international best practices and updated in 2018.[17,18]

Table 1. Cardiovascular disease indicators for Kenya				
Indicators	*Male*	*Female*	*Total*	*Year*
Status of the national CVD epidemic				
Premature CVD mortality (30–70 years old) (% deaths)	-	-	8	2012
Total CVD mortality (% of deaths)	12.9	15.0	13.8 (31.8)[7]	2019
Total RHD mortality (% of deaths)	0.11	0.17	0.14 (.5)[7]	2019
DALYs attributable to CVD (%)	6.5	6.04	6.29 (14.7)[7]	2019
AF and atrial flutter (%)	0.1	0.07	0.09 (.5)[7]	2019
Prevalence of RHD (%)	1.11	1.22	1.17 (.5)[7]	2019
Tobacco and alcohol				
Prevalence of adult tobacco use (≥ 15 years old) (%)[8]	23 (36.1)[6]	4.1 (6.8)[6]	-	2015
Prevalence of youth (13–15-year-olds) tobacco use (%)[8]	12.8 (18.4)[6]	6.7 (8.3)[6]	-	2013
Estimated direct (healthcare-related) cost of tobacco use in your population (current US$)	-	-	-	
Proportion of premature CVD mortality attributable to tobacco (%)	-	-	2 (10)[7]	2004
Recorded alcohol consumption per capita (≥ 15 years) (litres of pure alcohol) (three-year average)			1.7	2016-18
Raised blood pressure and cholesterol				
Population (15–64 years old) with raised BP (SBP ≥ 140 mmHg or DBP ≥ 90 mmHg) (%)[8]	25.1 (24.1)[6]	22.6 (20.1)[6]	-	2015
Population with raised TC (≥ 5.0 mmol/l) (%)[8]	7.3	12.8	10.1 (38.9)[6]	2015
DALYs attributable to hypertension (%)	4.05	3.95	4.0 (9.3)[7]	2019
Mortality caused by hypertensive heart disease (% of deaths)	1.12	2.46	1.73 (2.05)[7]	2019
Physical activity				
Adolescents (11–17 years old) who are insufficiently active (< 60 minutes of moderate- to vigorous-intensity PA daily) (%)[12]	84.9	88.9	86.8 (80.7)[6]	2015
Adults (age-standardised estimate) who are insufficiently active (< 150 minutes of moderate-intensity PA per week, or < 75 minutes of vigorous-intensity PA per week) (%)[8]	6.3	6.8	6.5 (27.5)[6]	2015
Overweight and obesity				
Adults (18–64 years old) who are overweight (BMI ≥ 25–< 30 kg/m^2) (%)[8]	13.2	24.9	19 (38.9)[6]	2015
Prevalence of obesity (BMI ≥ 30 kg/m^2) (adults 25–64 years old) (%)[8]	4.3	13.7	8.9 (13.1)[6]	2015
Diabetes				
Defined population with fasting glucose ≥ 126 mg/dl (7.0 mmol/l) or on medication for raised blood glucose (age-standardised) (%)[8]	1.5 (9)[6]	2.3 (8)[6]	1.9	2015
Prevalence of diabetes (20–79 years old) (%)	-	-	3.1 (9.3)[13]	2019

CVD, cardiovascular disease; RHD, rheumatic heart disease; DALYs, disability-adjusted life years; AF, atrial fibrillation; SBP, systolic blood pressure; DBP, diastolic blood pressure; TC, total cholesterol; PA, physical activity; BMI, body mass index.
[7]IHME global data exchange; [8]STEPS 2015; [6]WHO GHO data; [12]Guthold *et al.*; [13]*IDF diabetes Atlas.*

However, no system to measure the quality of care provided to people who have suffered acute cardiac events has been noted.

Essential medicines and interventions

Most of the essential medicines were generally available in primary-care facilities except for warfarin and clopidogrel.[6] In 2015, total cholesterol measurement was generally available at the primary healthcare level, while CVD risk stratification or secondary prevention of rheumatic fever and RHD were not prioritised at this level.[6] However, in the new NCD strategic plan 2021–25, CVD risk stratification has been prioritised and should be available later in 2021.

Secondary prevention and management

The STEP survey revealed that 7% of hypertensive persons received medical treatment in 2015,[8] whereas no data were available on high-risk patients with AF being treated with oral anticoagulants or those with a history of CVD who were taking aspirin, statin and at least one antihypertensive agent.

Part D: Cardiovascular disease governance

Kenya does not have a national strategy or plan that specifically addresses CVD and their risk factors or RHD prevention and control as a priority. However, there is one that focuses on non-communicable diseases (NCDs) and related risk factors.[6,19] A national surveillance system that includes CVD and their risk factors has been set up.[8,20]

A national tobacco-control strategic plan and a multi-sectoral co-ordination mechanism have respectively been launched and implemented.[21,22] Collaborative projects for NCD interventions, including CVD, have been implemented between the MoH and non-health ministries and civil societies in Kenya.[23,24]

In a report by the World Bank Group and MoH, the benefits of CVD prevention and control for population health and the economy have been modelled using the United Nation's interagency OneHealth Tool. This software-based health-modelling tool is used to assess the costs and health benefits of interventions.[25]

Assessment of policy response

There is no legislation mandating health financing for CVD, essential CVD medicines at affordable prices or any court orders protecting patients' rights and mandating improved CVD interventions, facilities, health-system procedures or resources. Legislation is employed in areas where smoking is banned, as are visible warnings on tobacco packs, advertising, and measures to protect tobacco control policies from tobacco industry interference.[21] Through the solatium fund, that is from taxation of tobacco or other 'sin' products, sustainable funding for CVD is partially available.[26]

Policies that ensure equitable nationwide access to healthcare professionals and facilities are also present.[23] Furthermore, policy interventions that promote a diet that reduces CVD risk are available.[15] Kenya's Health Act of 2017 mandates implementing policies to reduce NCDs, including CVD.[27] No other legislation is available or in place.

Stakeholder action

Non-governmental organisation advocacy for CVD policies and programmes,[28] along with active involvement of patients' organisations in advocacy for CVD/NCD prevention and management, are in place.[24] Advocacy champions along with patient engagement groups for RHD have been implemented.

Civil society is involved in the development and implementation of a national tobacco-control plan.[21] There is a technical working group that draws multi-sectoral participation for NCDs/CVD.[24,29] These societies include the Kenya Association for Prevention of Tuberculosis and Lung Diseases, KCS, Kenya Diabetes Association, Kenya Society for Haemato-Oncology and the Non-Communicable Disease Alliance, Kenya.[24]

Specific activities by cardiology professional associations aimed at 25% reduction in premature CVD mortality by 2025 have been developed,[19] while no hypertension screening by businesses at workplaces was reported.

Forthcoming from these data, we summarise Kenya's strengths, weaknesses, threats and priorities.

Strengths

National guidelines for most CVD and NCD risk factors have been developed.[15,17] Through Kenya's national NCD strategic plan 2015–20 (the NCD strategic plan 2021–25 will be launched by May/June 2021), the MoH has envisioned to:
- establish mechanisms to integrate NCD prevention and control at national and county level into policies across all government sectors
- formulate and strengthen legislations, policies and plans for preventing and controlling NCDs at county and national government level
- promote healthy lifestyles and implement interventions to reduce the modifiable risk factors for NCDs, which include unhealthy diets, physical inactivity, harmful use of alcohol, tobacco use and exposure to tobacco smoke
- promote and conduct research and surveillance for the prevention and control of NCDs, which include CVD
- promote sustainable local and international partnerships for preventing and controlling NCDs
- establish and strengthen effective monitoring and evaluation systems for NCDs and their determinants
- strengthen health systems for NCD prevention and control across all levels of the health sector
- promote and strengthen advocacy, communication and social mobilisation for NCD prevention and control.

The Kenya Health Policy 2014–30[23] outlines the direction the health sector has taken to ensure that the overall status of health is not only in line with the Constitution of Kenya 2010 but is also significantly improved.[14] Furthermore, the policy identifies key areas of focus, which include reducing the burden of NCDs through strengthening primary healthcare, among other strategies.[23] Kenya reported having a nutritional strategy to control unhealthy diets, by promoting healthy diets.[19] Since 2013, free maternity services have been introduced, leading the way for increased access to healthcare by reducing household expenditure on health.[30]

Weaknesses

Kenya does not have a national strategy or plan that specifically addresses CVD and their risk factors or RHD prevention and control as a priority. Although the country's Poverty Reduction Strategy Paper and National Development Plan, *Vision 2030*, include health under the social pillar, NCDs are not mentioned. Furthermore, implementation of the nutritional strategy is weak.[24]

Threats

Raised BP levels among Kenyans are a matter of concern, as in the other countries under investigation, except Ethiopia and Rwanda that had levels below 20% among men and women. A project by Abt Associates was done to find the best approach to addressing NCDs in Kenya.[31] Heart disease and diabetes were increasing, with hypertension being the leading cause of CVD. The Healthy Heart Africa programme was established with the main barriers being a lack of awareness, insufficient screening and inadequate access to affordable medication for hypertension.[31]

Kenya's total CVD mortality rate (13.8%) is higher than most of the other African countries participating in the CVD Scorecard project; those with a higher rate are South Africa (16.1%), Namibia (17.7%), Sudan (33%) and Tunisia (51.5%). Although the prevalence of RHD (1.2%) is higher than most of these countries, the mortality rate, in comparison, is similar or lower, with only Namibia having a lower rate at 0.11 versus 0.14%.

Tobacco use among young men is high at almost 13%, while more young women (6.7%) were found to make use of this habit than adult women (4.1%). Almost 90% of adolescents are not physically active according to the daily 60 minutes of moderate-to vigorous-intensity PA recommended by the WHO.

Priorities and achievements

To achieve global and national health goals highlighted in the Sustainable Development Goals, strengthening the health workforce through policy, adequate financing, planning, recruitment, training and retention will ensure improved access to healthcare and health systems.[30]

In a study on the determinants of CVD mortality, it was suggested that prevention and adherence to treatment for CVD be addressed at the policy, population and individual level, along with socio-economic factors.[32]

Dissemination of the National CVD guidelines launched by the MoH in 2018 to improve heart health outcomes of Kenyans has commenced at various workshops throughout the country. CVD prevention, hypertension control, heart failure and RHD are top-listed to receive attention by health professionals and related officials.[33] KCS, through the WHF's World Heart Grant Programme, initiated a campaign, 'Meet your Heart Doctor'.[34] The main objectives are to:

- increase awareness of heart diseases and the link between COVID-19 and CVD
- educate people to manage their condition and prevent COVID-19 infection
- build up the capacity for KCS to interact more effectively with patients and develop a strategy for meaningful engagement with this population.

The country is continually training healthcare workers on hypertension and heart failure. So far 1 500 health workers have been trained in Kenya and we plan to train more (GG, pers commun). Improvement of routine data systems for CVD is a priority in the MoH in Kenya.

This publication was reviewed by the PASCAR Governing Council and approved by the president of the Kenya Cardiac Society.

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Omega-3 supplementation linked with atrial fibrillation risk: a meta-analysis

Omega-3 supplements are associated with an increased likelihood of developing atrial fibrillation in people with high blood lipids, a meta-analysis of randomised control trials published in the *European Heart Journal* found.

'Currently, fish oil supplements are indicated for patients with elevated plasma triglycerides to reduce cardiovascular risk,' said study author Dr Salvatore Carbone of Virginia Commonwealth University, USA. 'Due to the high prevalence of elevated triglycerides in the population, they can be commonly prescribed. Of note, low-dose omega-3 fatty acids are available over the counter, without the need for a prescription.'

Some clinical trials have suggested that omega-3 fatty acids may be associated with an increased risk for atrial fibrillation, the most common heart rhythm disorder. People with the disorder have a five times greater likelihood of having a stroke.

These studies tested different formulations of omega-3 fatty acids at different doses. The authors therefore performed a comprehensive meta-analysis of randomised controlled trials to answer the question of whether fish oils were consistently related to a raised risk for atrial fibrillation.

The analysis included five randomised controlled trials investigating the effects of omega-3 fatty acid supplementation on cardiovascular outcomes. Participants had elevated triglycerides and were either at high risk for cardiovascular disease or had established cardiovascular disease. A total of 50 277 patients received fish oils or placebo and were followed up for between two and 7.4 years. The dose of fish oils varied from 0.84 to 4 g per day.

The researchers found that omega-3 fatty acid supplementation was associated with a significantly increased risk for atrial fibrillation compared to placebo, with an incidence rate ratio of 1.37 (95% confidence interval 1.22–1.54; $p < 0.001$).

Carbone said: 'Our study suggests that fish oil supplements are associated with a significantly greater risk of atrial fibrillation in patients at elevated cardiovascular risk. Although one clinical trial indicated beneficial cardiovascular effects of supplementation, the risk for atrial fibrillation should be considered when such agents are prescribed or purchased over the counter, especially in individuals susceptible to developing the heart rhythm disorder.'

Source: *European Heart Journal* 2021